Amendments to the Claims

Please cancel Claims 1-10 and 14-30. Please amend Claim 12. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1-10 (Canceled)

11. (Original) A fluid sterilization apparatus comprising:

a container for containing a supply of fluid;

a wheel system having circumferential surfaces, the wheel system being rotatably mounted within the container, a portion of the wheel system for extending above the supply of fluid with rotation of the wheel system drawing a film of fluid upwardly out of the supply of fluid on the circumferential surfaces;

a doctoring member for controlling the thickness of the film of fluid on the circumferential surfaces of the wheel system;

an electron beam generator for irradiating the film of fluid with a beam of electrons to sterilize the fluid; and

a fluid removal member for removing sterilized fluid from the wheel system.

12. (Currently Amended) The apparatus of Claim 11 in which the wheel system comprises a first wheel ~~rotably~~ rotatably mounted within the container for drawing the film of fluid from the supply of fluid.

13. (Original) The apparatus of Claim 12 in which the wheel system further comprises a second wheel rotatably contacting the first wheel for receiving fluid from the first wheel to be irradiated by the electron beam generator.

14-30 (Canceled)

31 (Original) A method of forming a fluid sterilization apparatus comprising

providing a container capable of containing a supply of fluid;

rotatably mounting a wheel system having circumferential surfaces within the container, a portion of the wheel system for extending above the supply of fluid with rotation of the wheel system drawing a film of fluid upwardly out of the supply of fluid on the circumferential surfaces;

providing a doctoring member for controlling the thickness of the film of fluid on the circumferential surfaces of the wheel system;

providing an electron beam generator for irradiating the film of fluid with a beam of electrons to sterilize the fluid; and

providing a fluid removal member for removing sterilized fluid from the wheel system.

32. (Original) The method of Claim 31 further comprising providing the wheel system with a first wheel rotatably mounted within the container for drawing the film of fluid from the supply of fluid.

33. (Original) The method of Claim 32 further comprising providing the wheel system with a second wheel rotatably contacting the first wheel for receiving fluid from the first wheel to be irradiated by the electron beam generator.

34. (Original) A method of sterilizing fluid comprising:

drawing a film of fluid upwardly out of a supply of fluid contained within a container on circumferential surfaces of a rotating wheel system rotatably mounted within the container, a portion of the wheel system extending above the supply of fluid;

controlling the thickness of the film of fluid on the circumferential surfaces of the wheel system with a doctoring member;

irradiating the film of fluid with a beam of electrons from an electron beam generator to sterilize the fluid; and

removing the sterilized fluid from the wheel system with a fluid removal member.

35. (Original) The method of Claim 34 further comprising drawing the film of fluid from the supply of fluid with a first wheel of the wheel system.

36. (Original) The method of Claim 35 further comprising rotatably contacting a second wheel of the wheel system with the first wheel for receiving fluid from the first wheel for irradiation by the electron beam generator.

37. (Previously Presented) A fluid sterilization apparatus comprising:

a sterilization chamber having a cavity therein;

a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity;

an electron beam generator having an exit window, the electron beam generator being mounted to the sterilization chamber for directing a beam of electrons through the exit window into the cavity to the sterilization chamber to irradiate the spray of fluid, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window; and

a pump for pumping the fluid.

38 (Previously Presented) The apparatus of Claim 37 further comprising a filter for filtering particles from the fluid.

39. (Previously Presented) A fluid sterilization apparatus comprising:

a sterilization chamber having a cavity therein;

a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity, the nozzle directing a thin, flat film of fluid about .004 to .005 inches thick within the sterilization chamber; and

an electron beam generator having an exit window, the electron beam generator being mounted to the sterilization chamber for directing a beam of electrons through the exit window into the cavity to the sterilization chamber to irradiate the spray of fluid, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window.

40. (Previously Presented) A fluid sterilization apparatus comprising:

a sterilization chamber having a cavity therein;

a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity, the nozzle directing a thin, flat film of fluid within the sterilization chamber;

an electron beam generator having an exit window, the electron beam generator being mounted to the sterilization chamber for directing a beam of electrons through the exit window into the cavity to the sterilization chamber to irradiate the spray of fluid, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window; and

the cavity of the sterilization chamber including an outlet through which fluid that is sterilized is removed and a recycling passage for directing a portion of the spray of fluid back for further irradiation.

41. (Previously Presented) The apparatus of Claim 40 in which the cavity includes a wall between the cavity outlet and the recycling passage for directing any fluid from the spray of fluid unable to pass over the wall into the recycling passage.

42. (Previously Presented) A fluid sterilization apparatus comprising:

a sterilization chamber having a cavity therein;

a nozzle for receiving pressurized fluid and for directing a spray of the fluid into the cavity, the spray of the fluid being a thin, flat, film of fluid about .004 to .005 inches thick; and

an electron beam generator mounted to the sterilization chamber for directing a beam of electrons into the cavity of the sterilization chamber to irradiate the spray of fluid.

43. (Previously Presented) A method of forming a fluid sterilization apparatus comprising:

providing a sterilization chamber having a cavity therein;

forming a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity;

mounting an electron beam generator to the sterilization chamber, the electron beam generator having an exit window and for directing a beam of electrons through the exit window into the cavity of the sterilization chamber to irradiate the spray of fluid, the

nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window; and

providing a pump for pumping the fluid.

44. (Previously Presented) The method of Claim 43 further comprising providing a filter for filtering particles from the fluid.

45. (Previously Presented) A method of forming a fluid sterilization apparatus comprising:

providing a sterilization chamber having a cavity therein;

forming a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity, the nozzle capable of producing a thin, flat film of fluid about .004 to .005 inches thick; and

mounting an electron beam generator to the sterilization chamber, the electron beam generator having an exit window and for directing a beam of electrons through the exit window into the cavity of the sterilization chamber to irradiate the spray of fluid, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window.

46. (Previously Presented) A method of forming a fluid sterilization apparatus comprising:

providing a sterilization chamber having a cavity therein;

forming a nozzle for receiving pressurized fluid and directing a spray of the fluid into the cavity, the nozzle capable of forming a thin, flat film of fluid;

mounting an electron beam generator to the sterilization chamber, the electron beam generator having an exit window and for directing a beam of electrons through the exit window into the cavity of the sterilization chamber to irradiate the spray of fluid, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window;

forming the cavity of the sterilization chamber with an outlet through which fluid that is sterilized is removed; and

forming a recycling passage in the cavity of the sterilization chamber for directing a portion of the spray of fluid back for further irradiation.

47. (Previously Presented) The method of Claim 46 further comprising forming a wall within the cavity between the cavity outlet and the recycling passage for directing any fluid from the spray of fluid unable to pass over the wall into the recycling passage.

48. (Previously Presented) A method of sterilizing fluid comprising:

directing a spray of pressurized fluid from a nozzle assembly into a cavity of a sterilization chamber;

irradiating the spray of fluid with a beam of electrons from an electron beam generator mounted to the sterilization chamber, the electron beam generator having an exit window through which the beam of electrons is directed, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window; and

pumping the fluid to the nozzle assembly with a pump.

49. (Previously Presented) The method of Claim 48 further comprising filtering particles from the fluid with a filter.

50. (Previously Presented) A method of sterilizing fluid comprising:

directing a spray of pressurized fluid from a nozzle assembly into a cavity of a sterilization chamber, the spray of fluid being a thin, flat film of fluid about .004 to .005 inches thick; and

irradiating the spray of fluid with a beam of electrons from an electron beam generator mounted to the sterilization chamber, the electron beam generator having an exit window through which the beam of electrons is directed, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window.

51. (Previously Presented) A method of sterilizing fluid comprising:

directing a spray of pressurized fluid from a nozzle assembly into a cavity of a sterilization chamber, the spray of fluid being a thin, flat film of fluid;

irradiating the spray of fluid with a beam of electrons from an electron beam generator mounted to the sterilization chamber, the electron beam generator having an exit window through which the beam of electrons is directed, the nozzle being configured to direct the spray of fluid substantially parallel and proximate to the exit window;

removing fluid that is sterilized from the cavity of the sterilization chamber through an outlet; and

recycling a portion of the spray of fluid back for further irradiation through a recycling passage.

52. (Previously Presented) The method of Claim 51 further comprising recycling an initial spray of fluid.

53. (Previously Presented) The method of Claim 51 further comprising directing any fluid into the recycling passage that is unable to pass over a wall within the cavity between the cavity outlet and the recycling passage.